

AMENDMENTS TO THE CLAIMS

1. (currently amended) An active-matrix addressing LCD device comprising:
 - a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix substrate having data lines, scanning lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;
 - a source driver circuit for driving the data lines;
 - a gate driver circuit for driving the scanning lines; and
 - a controller circuit for controlling the source driver and the gate driver;

wherein a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs is inverted in every set of two or more horizontal synchronizing periods by the controller circuit;

wherein the source driver has a resetting means for resetting the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set;

wherein the resetting means performs its resetting operation with reference to a latch signal supplied to the source driver circuit by the controller circuit, the latch signal being started between the end of the writing period and the end of the blanking period; and

wherein the resetting operation is completed before the writing period when the polarity of the data voltage is not inverted, ~~the polarity being oriented with respect to a vertical direction of the data lines~~~~the polarity being the same before and after the resetting operation~~, the writing period being a period where a data voltage is applied, the resetting operation comprising bringing values of all data voltages closer to the middle point voltage between the positive and negative amplitudes; and

wherein the data lines do not apply a subsequent data voltage to each of the pixels in the blanking period; the subsequent data voltage being a data voltage that follows a previous data voltage.

2. (Canceled)

3. (Original) The device according to claim 1,

wherein each of the data voltages alternately has a positive value or a negative value in the polarity inversion period; and

wherein the resetting means is controlled in such a way that each of the data voltages will reach a middle point value between the positive value and the negative value after the resetting operation is completed.

4. (Withdrawn) The device according to claim 1, wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods and in every vertical synchronizing period within every frame period, thereby driving the device by a 2-H dot inversion method.

5. (Withdrawn) The device according to claim 1, wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods within every frame period, thereby driving the device by a 2-H line inversion method.

6. (Withdrawn) An active-matrix addressing LCD device comprising:

a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix substrate having data lines, gate lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;

a source driver circuit for driving the data lines;

a gate driver circuit for driving the scanning lines; and

a controller circuit for controlling the source driver and the gate driver;

wherein a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs is inverted in every set of two or more horizontal synchronizing periods by the controller circuit;

wherein the source driver has a polarity inverting means for inverting the polarity of the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set; and

wherein the polarity inverting means performs its polarity-inverting operation with reference to a latch signal and a polarity-inverting signal, which are supplied to the source driver circuit by the controller circuit.

7. (Canceled)

8. (Withdrawn) The device according to claim 6, wherein the polarity inverting means is controlled in such a way that each of the data voltages will reach a value of an opposite polarity after the polarity-inverting operation is completed.

9. (Withdrawn) The device according to claim 6, wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods and in every vertical synchronizing period within every frame period, thereby driving the device by a 2-H dot inversion method.

10. (Withdrawn) The device according to claim 6, wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods within every frame period, thereby driving the device by a 2-H line inversion method.

11. (currently amended) A method of driving an active-matrix addressing LCD device, the device comprising:

a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix

substrate having data lines, scanning lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;

- a source driver circuit for driving the data lines;
- a gate driver circuit for driving the scanning lines; and
- a controller circuit for controlling the source driver and the gate driver;

the method comprising:

inverting a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs in every set of two or more horizontal synchronizing periods; and

resetting the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set

wherein an operation of resetting the data voltages is performed with reference to a latch signal supplied to the source driver circuit by the controller circuit, the latch signal being started between the end of the writing period and the end of the blanking period; and

wherein the resetting operation is completed before the writing period when the polarity of the data voltage is not inverted, ~~the polarity being oriented with respect to a vertical direction of the data lines the polarity being the same before and after the resetting operation~~, the writing period being a period where a data voltage is applied, the resetting operation comprising bringing values of all data voltages closer to the middle point voltage between the positive and negative amplitudes; and

wherein the data lines do not apply a subsequent data voltage to each of the pixels in the blanking period, the subsequent data voltage being a data voltage that follows a previous data voltage.

12. (Canceled)

13. (Original) The method according to claim 11, wherein each of the data voltages alternately has a positive value or a negative value in the polarity inversion period; and wherein an operation of the resetting the data voltages is performed in such a way that each of the data voltages will

reach a middle point value between the positive value and the negative value after the resetting operation is completed.

14. (Withdrawn) The method according to claim 11, wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods and in every vertical synchronizing period within every frame, period, thereby driving the device by a 2-H dot inversion method.

15. (Withdrawn) The method according to claim 11, wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods within every frame period, thereby driving the device by a 2-H line inversion method.

16. (Withdrawn) A method of driving an active-matrix addressing LCD device, the device comprising:

a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix substrate having data lines, scanning lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;

a source driver circuit for driving the data lines;

a gate driver circuit for driving the scanning lines; and

a controller circuit for controlling the source driver and the gate driver;

the method comprising:

inverting a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs, in every set of two or more horizontal synchronizing periods; and

inverting the polarity of the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set;

wherein an operation of inverting the polarity of the data voltages is performed with reference to a latch signal and a polarity-inverting signal, which are supplied to the source driver circuit by the controller circuit.

17. (Canceled)

18. (Withdrawn) The method according to claim 16, wherein an operation of inverting the polarity of the data voltages is performed in such a way that each of the data voltages will reach a value of an opposite polarity after the polarity-inverting operation is completed.

19. (Withdrawn) The method according to claim 16, wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods and in every vertical synchronizing period within every frame period, thereby driving the device by a 2-H dot inversion method.

20. (Withdrawn) The method according to claim 16, wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods within every frame period, thereby driving the device by a 2-H line inversion method.

21. (currently amended) An active-matrix addressing LCD device comprising:

a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix substrate having data lines, scanning lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;

a source driver circuit for driving the data lines;

a gate driver circuit for driving the scanning lines; and

a controller circuit for controlling the source driver and the gate driver;

wherein a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs is inverted in every set of two or more horizontal synchronizing periods by the controller circuit;

wherein the source driver has a resetting means for resetting the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set;

wherein the resetting means performs its resetting operation with reference to a latch signal supplied to the source driver circuit by the controller circuit, the latch signal being started between the end of the writing period and the end of the blanking period;

wherein the resetting operation is completed before the writing period when the polarity of the data voltage is not inverted;

wherein the data lines do not apply a subsequent data voltage to each of the pixels in the blanking period, the subsequent data voltage being a data voltage that follows a previous data voltage; and

wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods and in every vertical synchronizing period within every frame period, thereby driving the device by a 2-H dot inversion method, ~~the polarity being oriented with respect to a vertical direction of the data lines~~ the polarity being the same before and after the resetting operation;

the writing period being a period where a data voltage is applied, the resetting operation comprising bringing values of all data voltages closer to the middle point voltage between the positive and negative amplitudes.

22. (Withdrawn) An active-matrix addressing LCD device comprising:

a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix substrate having data lines, gate lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;

a source driver circuit for driving the data lines;

a gate driver circuit for driving the scanning lines; and
a controller circuit for controlling the source driver and the gate driver;
wherein a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs is inverted in every set of two or more horizontal synchronizing periods by the controller circuit;

wherein the source driver has a polarity inverting means for inverting the polarity of the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set; and

wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods and in every vertical synchronizing period within every frame period, thereby driving the device by a 2-H dot inversion method.

23. (Withdrawn) A method of driving an active-matrix addressing LCD device, the device comprising:

a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix substrate having data lines, scanning lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;

a source driver circuit for driving the data lines;

a gate driver circuit for driving the scanning lines; and

a controller circuit for controlling the source driver and the gate driver;

the method comprising:

inverting a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs in every set of two or more horizontal synchronizing periods; and

resetting the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set;

wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods and in every vertical synchronizing period within every frame, period, thereby driving the device by a 2-H dot inversion method.

24. (Withdrawn) A method of driving an active-matrix addressing LCD device, the device comprising:

a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix substrate having data lines, scanning lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;

a source driver circuit for driving the data lines;

a gate driver circuit for driving the scanning lines; and

a controller circuit for controlling the source driver and the gate driver;

the method comprising:

inverting a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs, in every set of two or more horizontal synchronizing periods; and

inverting the polarity of the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set;

wherein the polarity of the data voltages supplied by way of the data lines is alternately inverted in every set of the two horizontal synchronizing periods and in every vertical synchronizing period within every frame period, thereby driving the device by a 2-H dot inversion method.

25. (previously presented) The active-matrix addressing LCD of claim 1, wherein the polarity of the data voltage applied to each of the pixels by way of the corresponding one of the data lines and the corresponding one of the TFTs is not inverted after each horizontal synchronizing period.

26. (previously presented) The method of driving an active addressing LCD device of claim 11, further comprising the step of not inverting of after each horizontal synchronizing period the polarity of the data voltage applied to each of the pixels by way of the corresponding one of the data lines and the corresponding one of the TFTs.

27. (previously presented) The active-matrix addressing LCD device of claim 21, wherein the polarity of the data voltage applied to each of the pixels by way of the corresponding one of the data lines and the corresponding one of the TFTs is not inverted after each horizontal synchronizing period.

28. (currently amended) An active-matrix addressing LCD device comprising:

a panel including an active-matrix substrate, an opposite substrate, and a liquid crystal layer sandwiched by the active-matrix substrate and the opposite substrate, the active-matrix substrate having data lines, scanning lines that intersect with the data lines at intersections, pixels arranged near the respective intersections, and TFTs arranged as switching elements for the respective pixels;

a source driver circuit for driving the data lines;

a gate driver circuit for driving the scanning lines; and

a controller circuit for controlling the source driver and the gate driver;

wherein a polarity of a data voltage applied to each of the pixels by way of a corresponding one of the data lines and a corresponding one of the TFTs is inverted in every set of two or more horizontal synchronizing periods by the controller circuit, ~~the polarity being oriented with respect to a vertical direction of the data lines the polarity being the same before and after the resetting operation;~~

wherein the source driver has a resetting means for performing a resetting operation of resetting the data voltages outputted by the source driver circuit in a blanking period of each of the horizontal synchronizing periods of the set starting at an end of a writing period, the resetting operation is completed when the data voltages are a middle point voltage during the blanking period, the writing period being a period where a data voltage is applied, the resetting operation

comprising bringing values of all data voltages closer to the middle point voltage between the positive and negative amplitudes.

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